بلوغ الآمال

في

عملي الأطفال



*** 2nd Edition – 1430 ***

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بسم الله

الحمد لله على توفيقه وامتنانه، وَعَظِيم نعمه، وتتابع إِحسانه، وأَشهد أَن لا إِله إِلا الله وحده لا شريك له، وأَشهد أَن محمداً عبده ورسوله، اللهم صل وسلم عليه وعلى آله وأَصحابه ومن تبعهم بإحسان إلى يوم لقائه.

أما بعد: فقد كتب القاضي الفاضل البيساني عبد الرحيم المتوفى سنة 596 هــ إلى: العماد الأصفهاني، معتذراً عن كلام استدركه عليه:

(إنه وقع لي شيء، وما أدري أوقع لك أم لا، وها أنا أخبرك به، وذلك أنني رأيت أنه لا يكتب إنسان كتاباً في يومه إلا قال في غده:

لو غير هذا المكان لكان أحسن

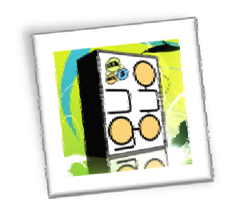
لو زيد هذا لكان يستحسن

ولو قدم هذا لكان أفضل

ولو ترك هذا لكان أجمل.

وهذا من أعظم العبر، وهو دليل على استيلاء النقص على جملة البشر) انتهى.

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.:: CONTENTS ::.

ARTERIAL BLOOD GASES

(ABG)

.:: حكمة غالية ::.

دَافِعِ الخَطْرَةَ؛ فإن لم تفعل، صارت فكرة، فدافع الفكرة؛ فان لم تفعل، صارت شهوة، فحاربها، فإن لم تفعل، صارت عزيمة وهمة، فإن لم تدافعها، صارت فعلاً، فإن لم تتداركه بضده، صار عادةً، فيصعب عليك الانتقال عنها.

(الفوائد-35)

.:: INDICATIONS ::.

1. <u>Respiratory diseases:</u>
   - Severe *pneumonia.*
   - Status Asthmatics.
   - Respiratory Distress Syndrome *(RDS).*
   - Acute bronchiolitis.
   - Acute Respiratory Failure *(ARF).*

2. <u>Cardiac diseases:</u>
   - Severe Heart Failure *(HF).*
   - Critical Cases *(blue spell).*

3. <u>Metabolic diseases (Electrolytes):</u>
   - Severe Gastro-Enteritis *(GE).*
   - Acute Renal Failure *(ARF).*
   - Diabetic Keto-Acidosis *(DKA).*

4. <u>Poisoning:</u>
   - Salicylates

.:: SIGNIFICANCE ::.

1. <u>Diagnostic:</u>
   - Assess severity of disease.
   - Diagnose 1^{ry} disorder.

2. <u>Therapeutic:</u>
   - Hypoxemia → O_2 therapy.
   - Ventilatory status → assess ventilation.
   - Metabolic Acid-Base imbalance → add alkali or acid.

3. <u>Prognostic & follow up:</u>
   - Response to ttt.

"PaO_2= Partial pressure of oxygen in arterial blood"

.:: ABG REPORT ::.

1. <u>Normal ABG.</u>
2. <u>Step-wise interpretation:</u>
   - Oxygenation.
   - Ventilation.
   - Acid-Base status.

3. <u>Diagnosis.</u>
4. <u>Therapy.</u>

II NORMAL ABG II

PaO_2	80 – 90 mmHg.	pH	7.35 – 7.45.
$PaCo_2$	35 – 45 mmHg.	HCo_3	22 – 26 mEq/L.

II STEP-WISE INTERPRETATION II

(1) OXYGENATION PaO_2	> 80 mmHg 60-79 mmHg 50-59 mmHg < 50 mmHg	*Normal oxygenation.* Mild hypoxemia. Moderate hypoxemia. Severe hypoxemia: *"indication of ventilation"*
(2) VENTILATION $PaCo_2$	35 - 45 mmHg < 35 mmHg > 45 mmHg > 50 mmHg	*Normal ventilation.* Hyperventilation. Hypoventilation. Respiratory failure.

(3)
ACID-BASE STATUS

(a) Acidosis or Alkalosis pH	7.35 - 7.45 > 7.45 < 7.35	*Normal Acid-Base status.* Alkalosis. Acidosis.
(b) Respiratory or Metabolic	Alteration of Co_2 Alteration of HCo_3	Respiratory. Metabolic.

.:: EXAMPLES ::.

(1) An infant 1y presenting with mild Respiratory Distress (RD):

PARAMETER	PATIENT	NORMAL VALUES	INTERPRETATION	DIAGNOSIS
PaO_2	90	80 - 90 mmHg.	Normal oxygenation.	*NORMAL ABG*
$PaCo_2$	40	35 - 45mmHg.	Normal ventilation.	
pH	7.38	7.35 - 7.45.	Normal Acid-Base status.	
HCo_3	23	22 - 26mEq/L.	No metabolic alteration.	

(2) An infant 1y presenting with moderate RD:

PARAMETER	PATIENT	NORMAL VALUES	INTERPRETATION	DIAGNOSIS
PaO_2	75 "↓"	80 - 90 mmHg.	Mild hypoxemia.	*ABG Showing: ... MILD HYPOXEMIA*
$PaCo_2$	40	35 - 45mmHg.	Normal ventilation.	
pH	7.38	7.35 - 7.45.	Normal Acid-Base status.	
HCo_3	23	22 - 26mEq/L.	No metabolic alteration.	

(3) An infant 1y presenting with HPS:

PARAMETER	PATIENT	NORMAL VALUES	INTERPRETATION	DIAGNOSIS
PaO_2	90	80 - 90 mmHg.	Normal oxygenation.	*METABOLIC ALKALOSIS*
$PaCo_2$	40	35 - 45mmHg.	Normal ventilation.	
pH	7.58 "↑"	7.35 - 7.45.	Alkalosis.	
HCo_3	33 "↑"	22 - 26mEq/L.	Metabolic.	

(4) An infant 1y presenting with severe RD:

PARAMETER	PATIENT	NORMAL VALUES	INTERPRETATION	DIAGNOSIS
PaO_2	90	80 - 90 mmHg.	Normal oxygenation.	*HYPO-VENTILATION + RESPIRATORY ACIDOSIS*
$PaCo_2$	50 "↑"	35 - 45mmHg.	Hypoventilation.	
pH	7.08 "↓"	7.35 - 7.45.	Acidosis.	
HCo_3	23	22 - 26mEq/L.	No metabolic alteration.	

(5) An infant 1y presenting with Juvenile Diabetes Milletus (JDM):

PARAMETER	PATIENT	NORMAL VALUES	INTERPRETATION	DIAGNOSIS
PaO_2	90	80 - 90 mmHg.	Normal oxygenation.	*METABOLIC ACIDOSIS*
$PaCo_2$	40	35 - 45mmHg.	Normal ventilation.	
pH	7.18 "↓"	7.35 - 7.45.	Acidosis.	
HCo_3	10 "↓"	22 - 26mEq/L.	Metabolic.	

(6) An infant 1y presenting with aspirin poisoning:

PARAMETER	PATIENT	NORMAL VALUES	INTERPRETATION	DIAGNOSIS
PaO_2	90	80 - 90 mmHg.	Normal oxygenation.	*HYPER-VENTILATION + RESPIRATORY ALKALOSIS*
$PaCo_2$	20 "↓"	35 - 45mmHg.	Hyperventilation.	
pH	7.58 "↑"	7.35 - 7.45.	Alkalosis.	
HCo_3	24	22 - 26mEq/L.	No metabolic alteration.	

CHEST X-RAY

(CXR)

.:: أعجب العجائب ::.

من أعجب الأشياء: أن تعرفه ثم لا تحبه، وأن تسمع داعيه ثم تتأخر عن الإجابة، وأن تعرف قدر الربح في معاملته ثم تعامل غيره، وأن تعرف قدر غضبه ثم تتعرض له، وأن تذوق ألم الوحشة في معصيته ثم لا تطلب الأنس بطاعته، وأن تذوق عصرة القلب عند الخوض في غير حديثه والحديث عنه ثم لا تشتاق إلى انشراح الصدر بذكره ومناجاته، وأن تذوق العذاب عند تعلق القلب بغيره ولا تهرب منه إلى نعيم الإقبال عليه والإنابة إليه!!

وأعجب من هذا: علمك أنك لا بُدَّ لك منه، وأنك أحوج شيء إليه، وأنت عنه مُعرِض، وفيما يبعدك عنه راغب!!

(الفوائد-47)

.:: INDICATIONS ::.

1. Respiratory diseases (Chest):
   - Pneumonias.
   - Chronic cough.

2. Cardiac diseases (Heart):
   - Congenital & Acquired HD.

3. Oncology (Mediastinum):
   - Assess staging of disease.

.:: GENERAL INFORMATION ::.

- The more solid a structure is, the whiter it appears on the film.
- *Bones* appear very white, but less dense tissues such as *muscle, blood, skin & fat* appear darker.
- *Air* appears black.

.:: CXR ::.

1. General information:
   - *Type of image:*
     Postero-anterior X-ray of the chest & heart.

   - *Position of patient:*
     Centralized (not tilted "the horizontal plane")
     Straight (not rotated "the vertical plane").

   - *Quality of film:*
     Good or bad.
     Good, soft or hard.

2. Extra-cardiac structures:
   - *Bony skeleton:*
     Chest is symmetrical.
     Not rib notching or fracture with average spaces in-between.

   - *Trachea:* Central or deviated.

   - *Mediastinum:* Central or deviated.
     No pathologic shadow "thymus gland is normal up to 2 years of age".

   - *Diaphragm:*
     Normal shape & position (Rt copula is at a higher level than Lt copula) *"no diaphragmatic paralysis".*
     Intact *"no diaphragmatic hernia".*
     Costo-phrenic & Cardio-phrenic angles are clearly seen.

3. Cardiac shadow:
   - *Site:*
     1/3 to the Right & 2/3 to the Left of mid-line
     Apex to the left "no dextro-cardia".

   - *Size:*
     Cardio-thoracic ratio is < 50% in children & < 55% in infants "no cardio-megaly".

   - *Shape:*
     Normally, Bear-shaped shadow "Boat-shaped (TOF) – Flask-shaped (Pericardial effusion)".

   - *Shadow: normally:*
     Right border is formed from above downwards by:
       1. Outer edge of SVC.
       2. Ascending aorta.
       3. Outer border of right atrium (ending at the diaphragm).
     Left border is formed from above downwards by:
       1. Aortic knuckle.
       2. Pulmonary artery.
       3. Apex of left ventricle (resting on the diaphragm).

4. Lung fields:
   - *Pleura: normally:*
     Not thickened.
     No trapped air "pneumo-thorax", fluid "hydro-thorax" or both "hydro-pneumo-thorax"

   - *Pulmonary Vascular Pattern (PVP) – Broncho Vascular Markings (BVM): normally:*
     Segmental branching vessels passing from the hilum into both lungs.
     Extending about 2/3 of the lung fields (with progressive tapering in size to the periphery).
     The lower zone vasculature is much more prominent.

     ↑ → Plethora.
     ↓ → Oligemia.

   - *Lung fields:*
     Upper: from the apex to the 2nd costal cartilage.
     Middle: from the 2md to the 4th costal cartilage.
     Lower: from the 4th costal cartilage to the base of the lung.

   ü No abnormal lung shadows (describe: site, size, shape & distribution):

.:: ABNORMAL LUNG SHADOWS::.

a) Pneumonias:
   1. Lobar “no shifting”.
   2. Broncho-pneumonia .
   3. Interstitial.

b) Abscess:
   1. Solitary.
   2. Multiple.

c) Collapse:
   1. Lobar “shifting”.
   2. Total.

X-RAY ON

(EXTREMITIES)

.:: حكمة غالية ::.

للعبد سِتْرٌ بينه وبين الله وسِتْرٌ بينه وبين الناس؛ فمن هتك الستر الذي بينه وبين الله؛ هتك الله الستر الذي بينه وبين الناس.

للعبد ربٌّ هو ملاقيه وبيت هو ساكنه؛ فينبغي له أن يسترضي ربه قبل لقائه، ويعمر بيته قبل انتقاله إليه.

(الفوائد-34)

.:: X-RAY WRIST (NORMAL) ::.



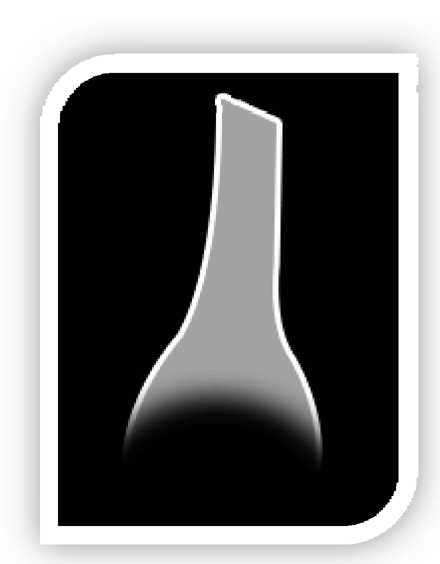
.:: RICKETS (PATHOLOGY) ::.

	NORMAL	RICKETS
Distal end	• Continuous. • Straight.	• Fraying. • Cupping.
Borders	• Parallel.	• Flaying.
Osteoid area	• Narrow.	• Wide.
Shaft	• Dense.	• Rarefied.

.:: ACTIVE RICKETS ::.



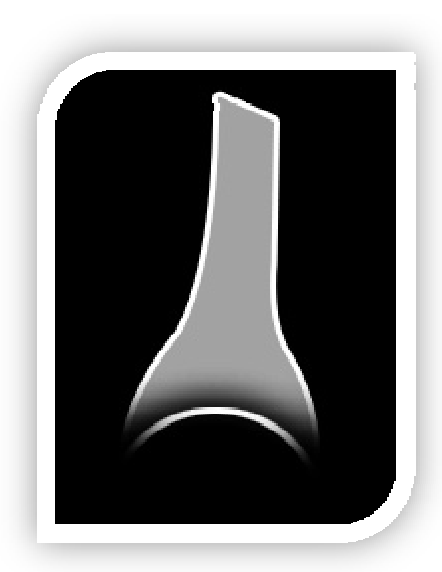




.:: HEALING RICKETS ::.



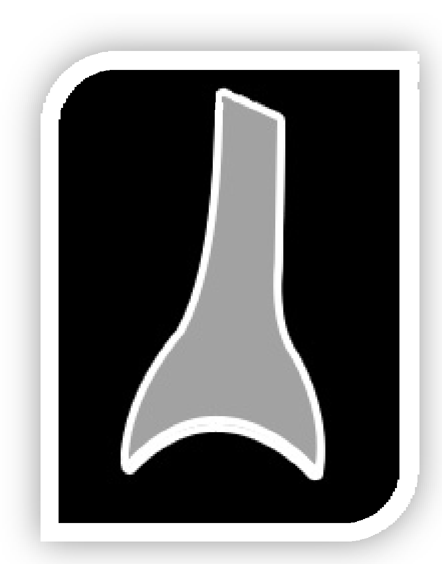
"Space between line of calcification & end of bone"



.:: HEALED RICKETS ::.



"Cupping"



BRAIN RADIOGRAPHS

(X-RAY - CT)

.:: احذر نفسك ::.

احذر نفسك! فما أصابك بلاء قط إلا منها؛ ولا تهادنها! فوالله، ما أكرمها من لم يهنها، ولا أعزها من لم يذلها، ولا جبرها من لم يكسرها، ولا أراحها من لم يتعبها، ولا أمنها من لم يخوفها، ولا فرحها من لم يحزنها.

(الفوائد-73)

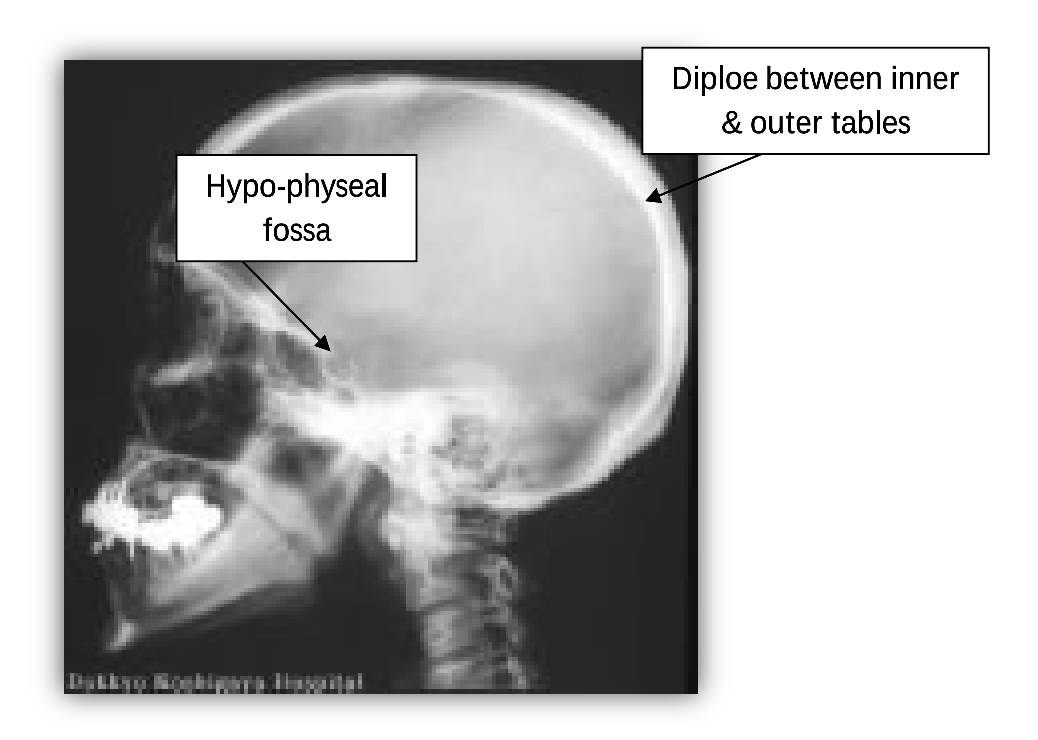
.:: INDICATIONS ::.

1. <u>Emergencies:</u>
    - Traumatic (Head trauma).
    - Non-traumatic (ICH).

2. <u>Cold cases:</u>
    - Epilepsy.
    - CP.
    - MR.

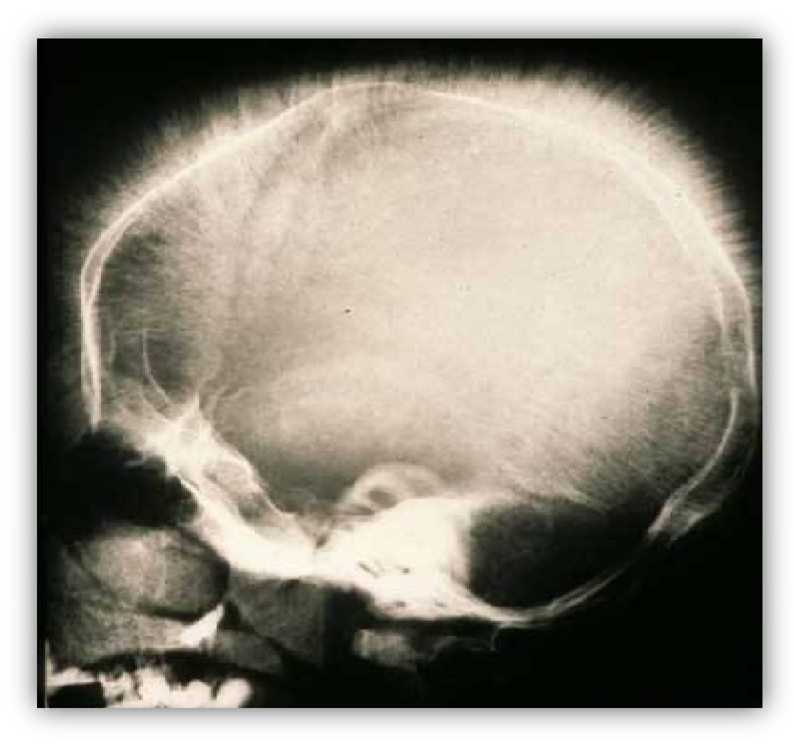
X-RAY SKULL

.:: NORMAL ::.



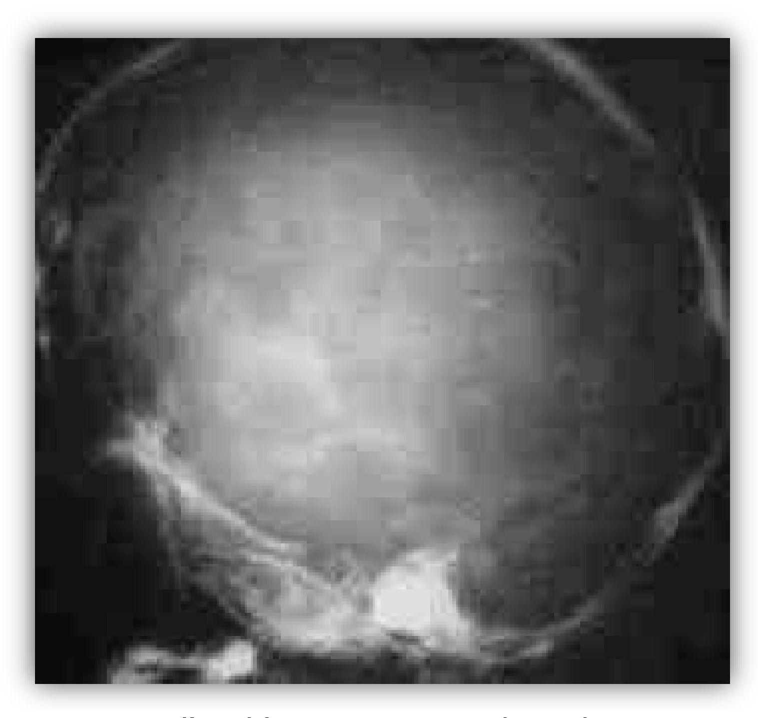
(Lateral view plain X-ray of the skull.
Normal inner & outer tables & diploic space.
Normal hypo-physeal fossa.)

.:: CHRONIC HEMOLYTIC ANEMIA ::.



“Hair on end appearance – wide diploe”

.:: CRANIO-STENOSIS ::.



“Silver bitten appearance (↑ ICT)”

COMPUTERIZED TOMOGRAPHY OF THE BRAIN (CT BRAIN)

I- INTERPRETATION OF CT BRAIN.

1. General information: CT BRAIN (Level of the scan):
   - Upper cortex.
   - High mid-brain.

2. Extra-cranial tissue: There is no extra-cranial blood collection.

3. Cranial bone: There is no skull fracture or erosion.

4. Blood: There is no intracranial hemorrhage.
   - Ø SDH.
   - Ø SAH.
   - Ø IVH.
   - Ø ICH.

5. CSF flow:

- Ventricular system: There is no dilatation or compression of Lateral, 3rd or 4th ventricles.
  - Ø Dilated LV, normal V3 & V4: Obstructive hydro-cephalus between LV & V3.
  - Ø Dilated LV & V3, normal V4: Obstructive hydro-cephalus between V3 & V4. "aqui-ductal stenosis".
  - Ø Dilated LV, V3 & V4: Communicating hydro-cephalus.

- Cisterns: Sylvian fissures are symmetrical, not dilated or compressed.
  - Ø Dilated (wide) → SAH.
  - Ø Compressed → ↑ ICT.

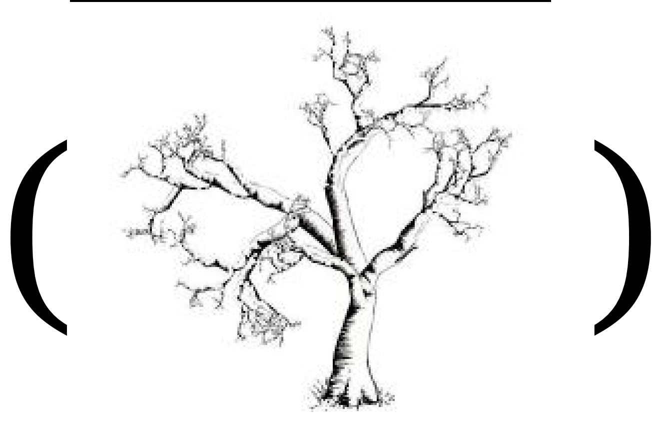
6. Brain tissue:
   There is no prominence of sulci.
   There is no loss of normal gray-white differentiation.
   There is no intracranial calcification, No localized or scattered lesions.

   - Ø Mass lesion:
     - Cystic lesion in right parietal region.
     - Calcifications.
   - Ø Infarction:
     - Loss of differentiation between gray & white matters.

II- DIAGNOSIS.

III- RECOMMENDATION.

PEDIGREE[1]

()

.:: ثمرات التفكر في آيات الله ::.

تأمّل خطاب القرآن تجد ملكاً له الملك كله وله الحمد كله، أزمَّة الأمور كلها بيده ومصدرها منه ومردُّها إليه، مستوياً على سرير ملكه، لا تخفى عليه خافية في أقطار مملكته، عالماً بما في نفوس عبيده، مُطَّلِعاً على أسرارهم وعلانيتهم، منفرداً بتدبير المملكة، يسمع ويرى، ويعطي ويمنع، ويثيب ويعاقب، ويكرم ويهين، ويخلق ويرزق، ويميت ويحيي، ويقدر ويقضي ويدبّر، الأمورُ نازلةٌ من عنده دقيقُها وجليلُها وصاعدة إليه، لا تتحرك ذرة إلا بإذنه، ولا تسقط ورقة إلا بعلمه.

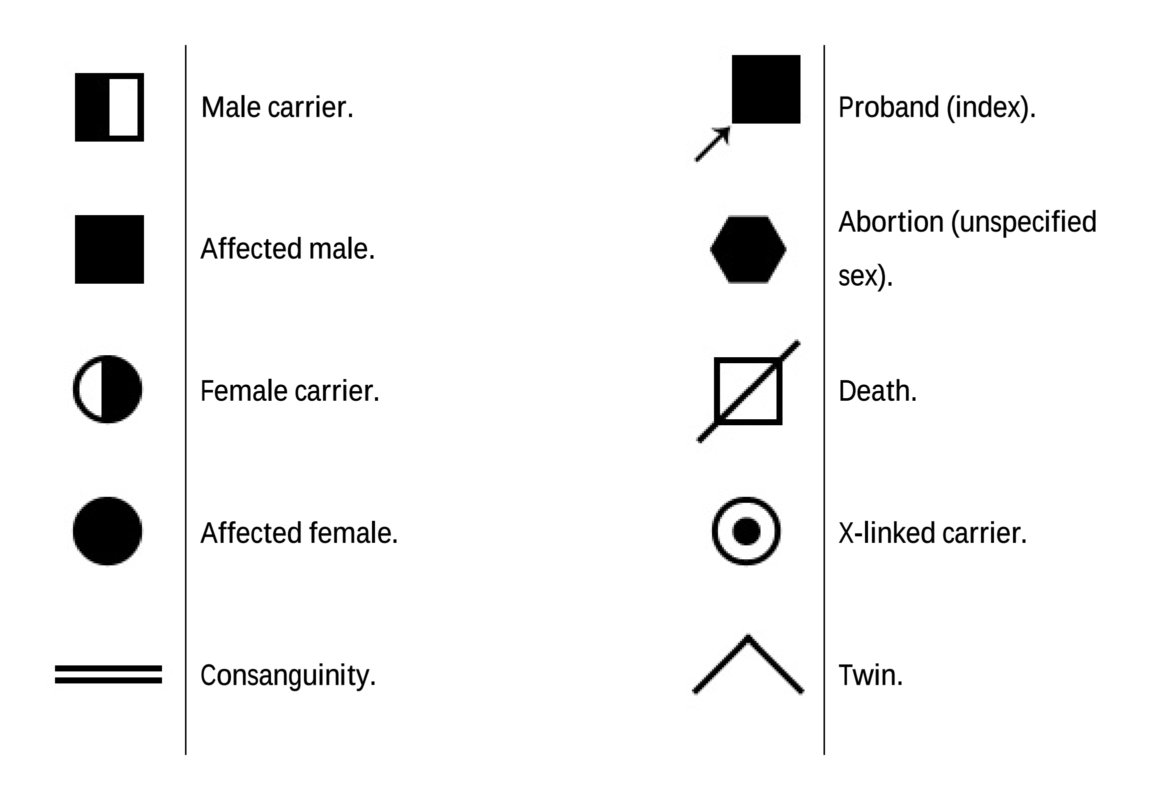
فإذا شهدت القلوب من القرآن ملكاً عظيماً رحيماً جواداً جميلاً هذا شأنه؛ فكيف لا تحبه، وتنافس في القرب منه وتنفق أنفاسها في التودد إليه، ويكون أحب إليها من كل ما سواه، ورضاه آثر عندها من رضا كل ما سواه؟! وكيف لا تلهج بذكره، ويصير الحب والشوق إليه والأنس به هو غذاؤها وقوتها ودواؤها؛ بحيث إن فقدت ذلك؛ فسدت وهلكت، ولم تنتفع بحياتها؟!

(الفوائد- 30 .. بتصرف)

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[1] شجرة النسب.

.:: SYMPOLS ::.



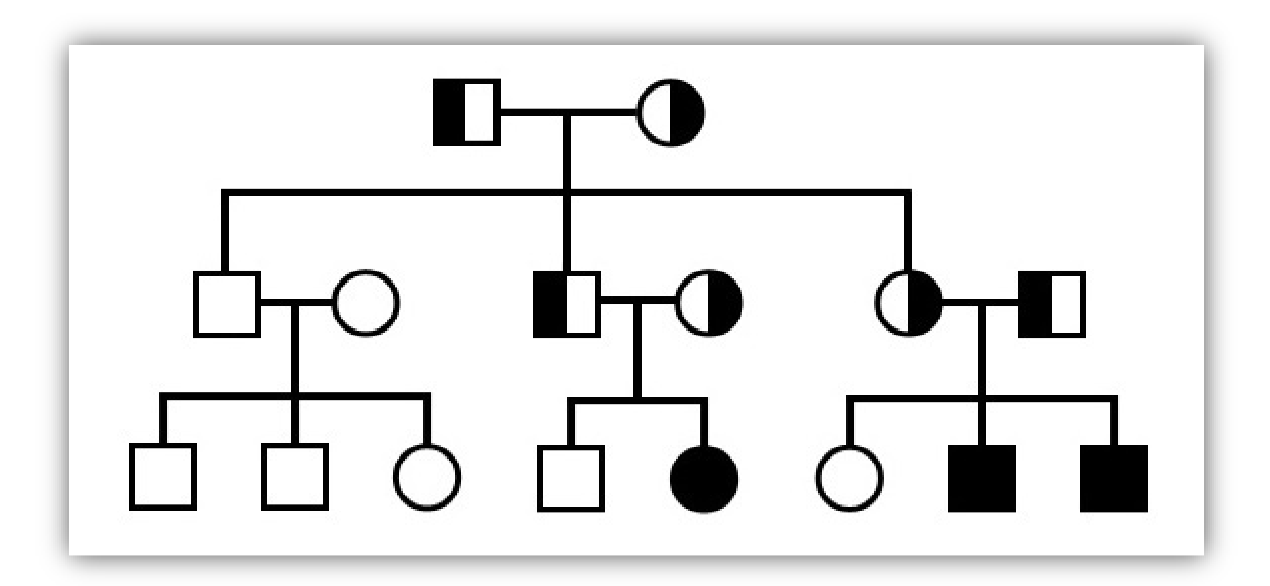
"The order of the off springs from the left to the right is from the younger to the older"

- If male & female are affected → autosomal.
- If male is only affected & female is a carrier → X-linked.

- If there is a carrier → recessive.
- If there is no carrier → dominant.

- If runs horizontally → recessive.
- If runs vertically → dominant.

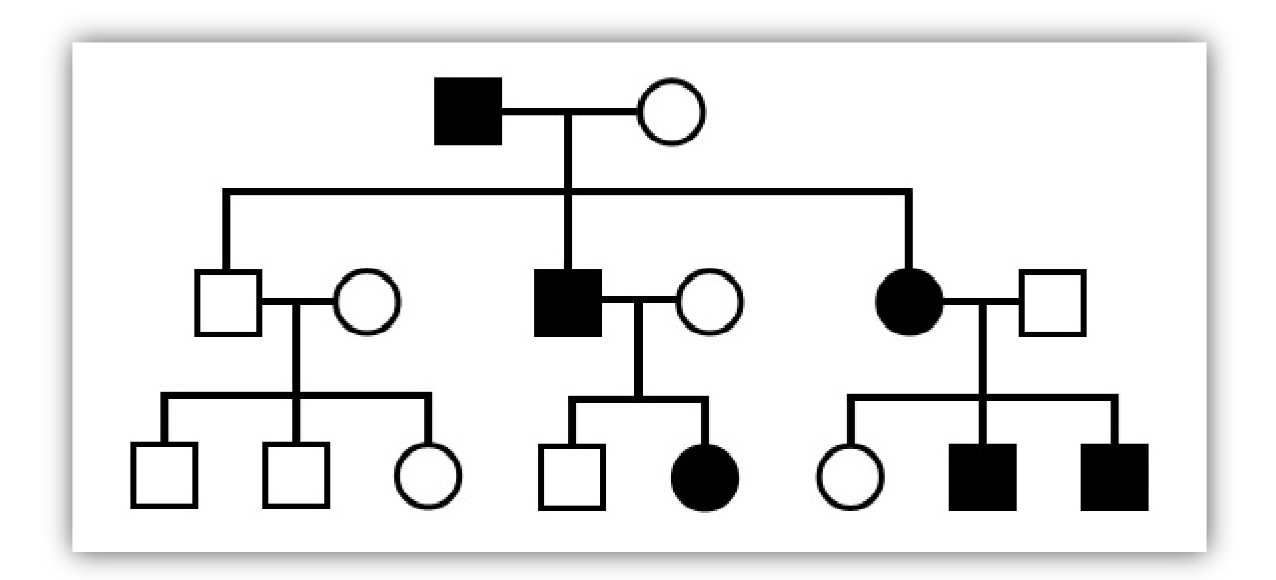
.:: EXAMPLE (1) ::.



- **v** Type of inheritance:
  - Autosomal recessive.

- **v** Example:
  - Thalassemia.
  - Sickle cell anemia.
  - Glycogen storage disease.

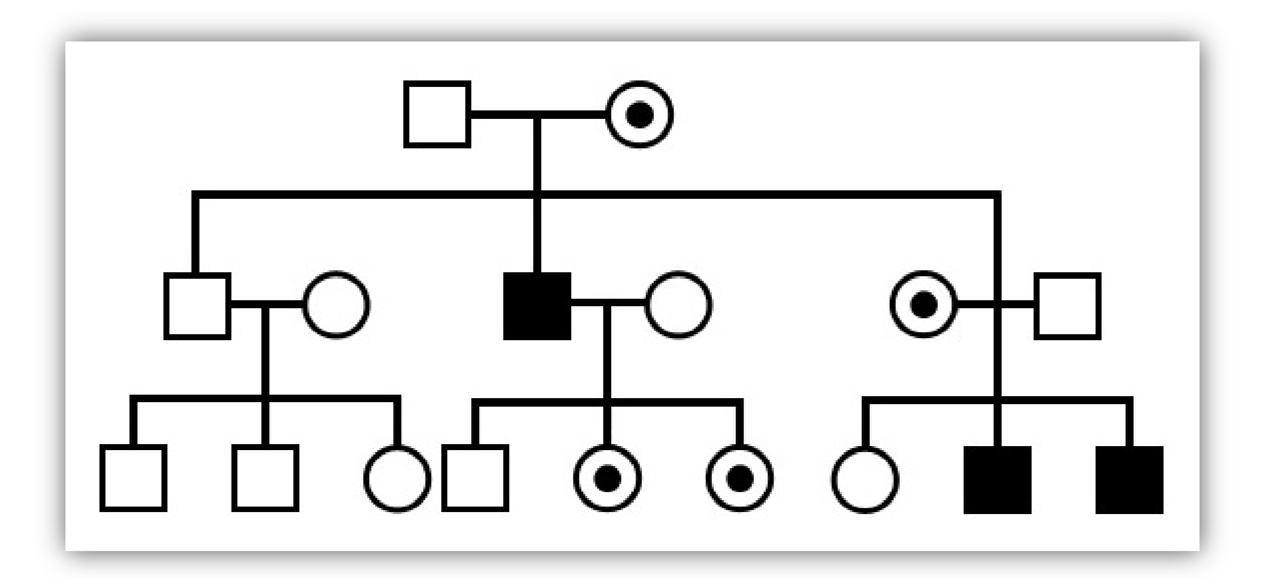
.:: EXAMPLE (2) ::.



- **v** Type of inheritance:
  - Autosomal dominant.

- **v** Example:
  - Hereditary spherocytosis.
  - Huntington chorea.
  - Achondroplasia.

.:: EXAMPLE (3) ::.



- Type of inheritance:
    - X-linked recessive.

- Example:
    - Glucose-6-phosphate dehydrogenase deficiency (G6PD).
    - Hemophilia A & B.
    - Duchenne muscular dystrophy.

LABORATORY INVESTIGATIONS

(Lab. Findings)

.:: الهداية والجهاد ::.

قال الله تعالى: {وَالَّذِينَ جَاهَدُوا فِينَا لَنَهْدِيَنَّهُمْ سُبُلَنَا} العنكبوت 69.

علَّق سبحانه الهداية بالجهاد؛ فأكملُ الناسِ هدايةً أعظمُهم جهاداً، وأفرضُ الجهادِ جهادُ النفس وجهاد الهوى وجهاد الشيطان وجهاد الدنيا؛ فمن جاهد هذه الأربعة في الله؛ هداه الله سبل رضاه الموصلة إلى جنته، ومن ترك الجهاد؛ فاته من الهدى بحسب ما عطل من الجهاد.

ولا يتمكن من جهاد عدوه في الظاهر إلا من جاهد هذه الأعداء باطناً؛ فمن نُصِرَ عليها؛ نُصِرَ على عدوه، ومن نُصِرَتْ عليه؛ نُصِرَ عليه عدوه.

(الفوائد-63 .. بتصرف)

.:: URINE ANALYSIS ::.

	Example-1	Example-2 "2 y. = 12 Kg"	Example-3 "5 y. = 18 Kg"
COLLECTION	Sample[2].	24 hour.	24 hour.
VOLUME		350 cc (↓*urine volume).*	300 cc *(oliguria).*
ASPECT	Turbid[3].	Clear.	Turbid.
COLOR	White.	Amber yellow.	Smoky red.
PH	Alkaline.	Acidic.	Acidic.
PROTEIN	++.	2 g *(proteinuria of nephrotic range).*	340 mg *(significant proteinuria).*
SUGAR	Nil.	Nil.	Nil.
PUS CELLS	200/HPF *(pyuria).*	4/HPF.	20/HPF.
RBCs	10/HPF *(hematuria).*	5/HPF.	60/HPF.
CASTS	WBCs casts *(so Upper UTI = Pyelo-nephritis).*	Granular & fatty casts.	Granular & RBCs casts.
	URINARY TRACT INFECTION (UTI)	NEPHROTIC SYNDROME	NEPHRITIC SYNDROME (GLOMERULO-NEPHRITIS)

URINE VOLUME: "cc/Kg/hour"

Oliguria[4]	< 0.8 <	↓ urine volume	< 1.5 <	Normal	< 3.5 <	↑ urine volume	< 5 <	polyuria

ü ***To convert from cc/24 hour → cc/Kg/hour:***
- o 350 cc/24 hour ÷ 24 ÷ wt[5] (12 Kg) = 1.3 cc/Kg/hour (↓urine volume).
- o 300 cc/24 hour ÷ 24 ÷ wt (18 Kg) = 0.7 cc/Kg/hour (oliguria).

URINE PROTEIN: "$mg/m^2/hour$"

Normal	< 4 <	Significant proteinuria	< 40 <	Proteinuria of nephrotic range

ü ***To convert from mg/24 hour → $mg/m^2/hour$:***
- o 2000 mg/24 hour ÷ 24 ÷ surface area[6] (0.53 m2) = 166 $mg/m^2/hour$ (Proteinuria of nephrotic range).
- o 340 mg/24 hour ÷ 24 ÷ surface area (0.73 m2) = 19 $mg/m^2/hour$ (Significant proteinuria).

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2 If the collection is sample = مفيش تعويض في المعادلات.

3 Turbid urine is caused by cells, casts or crystals (not protein).

4 Anuria = < 25 cc/day (24 hour urine volume).

5 Weight (2-6 years) = (age in years X 2) + 8

6 Surface area = {(wt X 4) + 7} ÷ (wt + 90)

.:: CSF ANALYSIS ::.

	NORMAL	SEPTIC MENINGITIS	TB MENINGITIS	ASEPTIC MENINGITIS OR ENCEPHALITIS
ASPECT	Clear.	Turbid.	Turbid.	Clear.
PROTEIN	20-40 mg/dL.	↑.	↑.	Normal or slightly ↑.
GLUCOSE	40-80 mg%.	↓	Slightly ↓.	Normal.
CELLS	No cells (< 5 lymphocytes).	Polymorphs (=neutrophils or pus cells).	Lymphocytes.	No cells or lymphocytes.
CULTURE	No growth.	Growth.	No growth.	No growth.

§ N.B.:
- ↑ proteins & ↑ cells → meningitis.
- ↑ proteins & no cells → protein cell dissociation (Guillain Barre syndrome).

.:: BLOOD ANALYSIS ::.

Example (1)

- Hb: 7 g/dL.
- Reticulocytes: 6%.
- MCV: 70 - MCH: 26 - MCHC: 30%.
- Platelets: 300,000.
- WBCs: 8,000.

1. The normal values?
2. Diagnosis?
   - Ø Mostly thalassemia or iron deficiency anemia under iron therapy.

§ N.B.:
- Corrected reticulocytic count = reticulocytic count X (patient Hb ÷ normal Hb).
  = 6 X (7 ÷ 14).
  = 3%.

Example (2)

- Acute onset of pallor, jaundice & red urine?

- Diagnosis?
  - Ø Acute hemolytic anemia.

Example (3)

§ 5-years boy, pica, chronic pallor & no organomegaly.
- RBCs : 2.5 million/mm.
- Serum iron: 25 ug%.
- Serum ferritin: 25 ug%.
- Reticulocytes: 1%.

- Diagnosis?
  - Ø Iron deficiency anemia.

Example (4)

- Jaundice in a full term infant 12 hours after delivery.
  - § Mother (B Rh –ve).
  - § Baby (A Rh +ve).
- CRP: 2 mg/L.
- Total bilirubin: 10 mg/dL.
- Direct bilirubin: 0.2 mg/dL.
- Reticulocytes: 20%.

1. The normal values?
2. Diagnosis?
   - Ø Rh incompatibility.
3. Blood group for exchange?
   - Ø O Rh –ve.
4. Volume of blood for exchange?
   - Ø 2 X 85 & wt (ml).

v <u>N.B.: Normal values in newborn infants:</u>
- ü Blood volume: 85 ml/Kg.
- ü Hb: 16-18 gm/dL.
- ü Hc volume: 55%.
- ü Reticulocytes: 5%.
- ü Total bilirubin (1st day): 1-3 mg%.

.:: LIVER FUNCTIONS ::.

- ↑ Liver enzymes (AST & ALT) → hepatic injury.
- ↑ Alkaline phosphatase → biliary injury.

- Normal albumin → acute injury.
- ↓ Albumin → chronic injury.

Example (1)

- ↑ Liver enzymes.
- Normal albumin.
- Biphasic jaundice.

1. The normal values?
2. Diagnosis?
   - Ø Acute hepatitis.

.:: KIDNEY FUNCTIONS ::.

- Isolated ↑ in Urea & Creatinine → Azotemia.
- Azotemia & Clinical manifestations of RF → Renal Failure.

ELECTRO-CARDIO-GRAM

(ECG)

.:: فائدة ::.

كيف يسلم من له زوجة لا ترحمه، وولد لا يعذره، وجار لا يأمنه، وصاحب لا ينصحه، وشريك لا ينصفه، وعدو لا ينام عن معاداته، ونفس أمارة بالسوء، ودنيا متزينة، وهوى مردٍ، وشهوة غالبة له، وغضب قاهر، وشيطان مزين، وضعفٌ مُسْتَوْلٍ عليه؟

فإن تولاه الله وجذبه إليه؛ انقهرت له هذه كلها، وإن تخلى عنه ووكله إلى نفسه، اجتمعت عليه، فكانت الهلكة.

(الفوائد-49)

.:: (1) RATE ::.

Note: lead II (long strip)

- Heart rate = 60 ÷ (number of small squares between 2 R X 0.04).

.:: (2) RHYTHM ::.

Note: lead II (long strip)

"Normally: regular, sinus rhythm"

1. Check for P wave:
   - Number = number of QRS complexes.
   - Location: P wave before every QRS complex.
   - Direction: +ve (upright).

2. Check for P-R interval (duration):
   - 0.12-0.2 seconds (number of small squares "3-5" X 0.04).

3. Check for QRS complex (morphology):
   - Duration: not wide.
   - Shape: not bizarre.

.:: (3) QRS AXIS::.

Note: QRS complex in leads I & III or leads I & aVF

"Normally: QRS complex is +ve in both leads"

Lt axis devitation	Rt axis devitation
o Lead **I** +ve & Lead **III** -ve.	o Lead **I** -ve & Lead **III** +ve.

.:: (4) CHAMBER HYPERTROPHY::.

II ATRIAL HYPERTROPHY II

Note: P-wave in lead II

"normally: P wave is < 3 mm in width & < 2.5 mm in height"

Lt atrial hypertrophy	Rt atrial hypertrophy
o Wide & notched P-wave (wider than 3 small squares = 3 mm = 0.12 seconds) = *P mitrale.*	o Tall & peaked P-wave (taller than 2.5 small squares = 2.5 mm) = *P pulmonale.*

II VENTRICULAR HYPERTROPHY II

Note: QRS complex in chest leads (V_1-V_6)

"normally: RV_6 is < 25 mm & rV_1 is < 7 mm"

Lt ventricular hypertrophy	Rt ventricular hypertrophy
o RV_6 > 25 small squares = 25 mm.	o rV_1 > 7 small squares = 7 mm.

.:: (5) CARDIAC INSULT::.

INJURY	ISCHEMIA	INFARCTION
NOTE:		
• S-T segment in all leads.	• S-T segment & T-wave in all leads.	• Q-wave in all leads.
NORMALLY:		
• Iso-electric S-T segment.	• Iso-electric S-T segment & no pathological inversion of T-wave[7].	• No pathological Q-waves[8].
ABNORMALITY:		
• Elevated S-T segment.	• Depressed S-T segment with inverted T-wave.	• Q-waves appear in Rt leads & deep Q-waves appear in Lt leads (> 3 mm).

II EXAMPLE II
.:: SYSTEMATIC INTERPERTATION OF ECG::.

1. RATE: 100/min.
2. RHYTHM: Regular, Sinus Rhythm:
   - o P wave is upright.
   - o P weave before every QRS complex.
   - o normal QRS morphology.
3. AXIS: Normal axis.
4. HYPERTROPHY: No atrial or ventricular hypertrophy.
5. CARDIAC INSULT: No injury, No ischemia, No infarction.

*** Conclusion: Normal Sinus Rhythm, Normal ECG tracing ***

[7] Normally inverted T-waves are observed in leads V_1, aVR & III.
[8] Normally: No Q-waves in Rt leads (V_1, aVR, III) & < 3 mm Q-waves in Lt leads (V_6, aVL, I).

.:: (6) MISCELLANEOUS EFFECTS::.

Hypo-kalemia	Flat T-wave.
Hyper-kalemia	Ten-shaped T-wave.
Hypo-calcemia	Prolonged S-T segment.
Hyper-calcemia	Short S-T segment.
Dgitalis	Sloping S-T segment.
Pericarditis	Elevated S-T segment.
Dextro-cardia	*Mirror-image ECG.*
neonates	*RVH + RAD + inverted T-wave up to* V_3.

INTEGRATED MANAGEMENT OF CHILDHOOD ILLNESS

(IMCI)

.:: عبرة وعظة ::.

الطريق إلى الله خالٍ من أهل الشك ومن الذين يتبعون الشهوات، وهو معمور بأهل اليقين والصبر، وهم على الطريق كالأعلام، {وَجَعَلْنَا مِنْهُمْ أَئِمَّةً يَهْدُونَ بِأَمْرِنَا لَمَّا صَبَرُوا وَكَانُوا بِآيَاتِنَا يُوقِنُونَ} السجدة 24.

(الفوائد-57)

.:: METHODS OF ASSESSMENT ::.

- Ask:
  - Name, age, sex & main complaint (cough or diarrhea).
- Check for DANGEROUS SIGNS.
- Assess, Classify & Treat.
- Counsel the Mother:

1. Food.
2. Fluid.
3. Follow up.

(1) .:: DANGEROUS SIGNS ::.

SIGNS (Any Danger Sign)	CLASSIFY	TREAT
1. ASK: • Is the child able to drink or breast-feed? • Does the child vomit every thing? • Has he had had convulsions? *(during present illness)* 2. LOOK: • See if the child is lethargic or unconscious? • See if the child is convulsing *now*? 3. FEEL: • FEEL does the child has stiff neck?	*VERY SEVERE DISEASE*	1. Treat convulsions if present now. 2. Complete assessment immediately. 3. Give 1st dose of appropriate Antibiotic. 4. Treat child to prevent low blood Sugar. 5. Refer URGENTLY to hospital.

*** DRUGS USED IN IMCI ***

CLASSIFICATION	DRUG	DOSAGE
Very severe disease	*Cefotaxime*	100 mg/kg, IM
Hypoglycemia	*Glucose*	50 ml, orally or NGT
Convulsion	*Na Valproate*	20 mg/kg, rectally
Pneumonia	*Amoxycillin*	50 mg/kg, IM
Wheezes	*Salbutamol*	2 puffs, 100 mcg/dose 1-5 ml, 2 mg/5ml
Dehydration	*ORS*	100 ml / loose stool
Dysentery	*Cotrimoxazole*	5 ml x 2 x 5 days
Fever	*Paracetamol*	5-10 ml (120 mg/5ml)

(2)
.:: COUGH ::.

Ø Does the child have Cough or Difficult breathing? → IF YES,

1. ASK:
- For how long?

2. LISTEN:
- For stridor.
- For wheeze *(If Wheeze, go directly to treat wheeze, then reassess).*

3. LOOK:
- Count the breaths in one minute.
- Look for chest indrawing.

ASSESS	CLASSIFY	TREAT
• Stridor in calm child, OR • Chest indrawing.	*SEVERE PNEUMONIA*	• Give 1st dose of appropriate antibiotic. • Treat wheezing, if present. • Treat child to prevent low blood sugar. • *Refer URGENTLY to hospital.*
• Fast breathing.	*PNEUMONIA*	• Give appropriate antibiotic for 5 days. • Treat wheezing, if present. • If coughing > 30 days, refer for assessment. • Relieve cough with a safe remedy. • Advise when to return immediately. • Follow up in 2 days.
• No signs of pneumonia.	*NO PNEUMONIA*	• Treat wheezing, if present. • If coughing … • Relieve cough … • Advise when … • Follow up in 2 days, if wheezing. • Follow up in 5 days, if not improving.

(3)
.:: DIARHHEA ::.

Ø Does the child have diarrhea? → IF YES,

1. ASK:
- For how long?
- Is there blood in the stools?

2. LOOK:
- Look at the child's general condition, Is he:
  - o Lethargic or unconscious?
  - o Restless or irritable?
- Look for sunken eyes.
- Offer the child fluid. Is the child:
  - o Not able to drink or drinking poorly?
  - o Drinking eagerly, thirsty?

3. FEEL:
- Pinch the skin on the abdomen, Does it go back:
  - o Very slowly (> 2 seconds)?
  - o Slowly?

II CLASSIFY FOR DEGREE OF DEHYDRATION II

ASSESS	CLASSIFY	TREAT
• Two of the following signs: 1. Lethargic or unconscious. 2. Sunken eyes. 3. Not able to drink or drinking poorly. 4. Skin pinch goes back very slowly.	*SEVERE DEHYDRATION*	• If child has no other severe classification: • Give fluids for severe dehydration (Plan C). • If child has also another severe classification: o *Refer URGENTLY to hospital* while giving ORS sips. • Advise to continue breastfeeding.
• Two of the following signs: 1. Restless or irritable. 2. Sunken eyes. 3. Drinking eagerly, thirsty. 4. Skin pinch goes back slowly.	*SOME DEHYDRATION*	• Give fluids and food for some dehydration (Plan B). • If child has also … • *Refer URGENTLY …* • Advise to continue breastfeeding. • Advise when to return immediately. • Follow up in 5 days if not improving.
• NO enough signs to classify as some or severe dehydration.	*NO DEHYDRATION*	• Give fluids and food to treat diarrhea at home (Plan A). • Advise when … • Follow up in …

II CLASSIFY FOR PERSISTENT DIARRHEA II

ASSESS	CLASSIFY	TREAT
• Dehydration present.	*SEVERE PERSISTENT DIARRHEA*	• Treat dehydration before referral unless the child has another severe classification. • *Refer to hospital.*
• No dehydration.	*PERSISTENT DIARRHEA*	• Advise mother on feeding child with Persistent Diarrhea. • Give multivitamin / mineral supplement. • Advise when … • Follow up in 5 days.

II CLASSIFY FOR DYSENTERY II

ASSESS	CLASSIFY	TREAT
• Blood in the stools.	*DYSENTERY*	• Give an oral antibiotic recommended for Shigella (trimethoprim) for 5 days. • Give metronidazole for 10 days. • Advise when … • Follow-up in 2 days.

THE NORMAL (SHEET)

"The faster you write, the more marks you get"

.:: من فضائل أبي بكر الصديق ::.

أسلم على يديه من العشرة: عثمانُ وطلحة والزبير وعبد الرحمن بن عوف وسعد بن أبي وقاص.
وكان عنده يوم أسلم أربعون ألف درهم فأنفقها أحوج ما كان الإسلام إليها.
فلهذا جلبت نفقته عليه: ((ما نفعني مال، ما نفعني مال أبي بكر)).
فهو خير من مؤمن آل فرعون؛ لأن ذلك كان يكتم إيمانه، والصديق أعلن به
وخير من مؤمن آل ياسين؛ لأن ذلك جاهد ساعة، والصديق جاهد سنين.

(الفوائد-78)

HISTORY

I. PERSONAL HISTORY
II. COMPLAINT
III. PRESENT HISTORY
IV. PAST HISTORY

1. OBSTETRIC HISTORY:
   1) Ante (Pre)-natal:
   - o No maternal medication, disease or radiation.
   - o Normal fetal movements.

   2) Natal:
   - o Normal vaginal delivery (or cesarean section).
   - o No birth trauma or asphyxia.

   3) Post-natal:
   - o Birth weight: ……
   - o No prematurity, incubation, jaundice or transfusion.
   - o Good suckling ability.

2. DEVELOPMENTAL HISTORY:
   - All developmental milestones (as regard gross motor, fine motor, social & language) are acquired at proper time.
   - Teeth eruption at proper time.

3. DIETETIC HISTORY:
   1) Type of milk feeding:
   - o Breast-feeding for 6 months, from both breasts, for 15 minutes each, 6-12 times/24 hour, sleeping after feeding.

   2) Weaning:
   - o Weaning after the 6^{th} month starting with rice.

4. VACCINATION HISTORY:
   - All recommended are received at proper time with no complications.

5. PAST ILLNESS:
   - No history of similar attacks.
   - No other disease, trauma, hospital admission, operation or blood transfusion.

V. FAMILY HISTORY

- -ve consanguinity.
- Father (age: ……), mother (age: ……) & 2 siblings (Age: ……) of good health.
- No history of similar disease.

*** Draw the pedigree ***

GENERAL EXAMINATION

1. General appearance:
   - The patient looks healthy, conscious, with no striking signs.
   - No pallor, jaundice or cyanosis.

2. Vital signs:
   1) Pulse:
   - …… beats/min, regular, average volume & force, no special character.
   - Vessel wall not felt.
   - Peripheral pulsation is felt.

   2) Blood pressure: …… / …… in the Rt UL.

   3) Temperature: …… ^{o}C.

   4) Respiratory rate: …… cycles/min.

3. Anthropometric measures:
   1) Weight: ……

   2) Length/Height: ……

   3) Head circumference: ……

   4) Midarm circumference: ……

4. Regional examination:
   1) Skin & mucus membrane:
   - Normal skin elasticity.
   - No pallor, jaundice or cyanosis.

   2) Head & neck:
   - Anterior fontanel is open, 2.5 X 2.5 cm, slightly depressed & pulsating.
   - No congested neck veins.

   3) Extremities & spine:
   - No clubbing.

SYSTEMIC EXAMINATION

.:: CARDIAC EXAMINATION ::.

1. INSPECTION:

1) Shape of the pre-cordium: No pre-cordial bulge.

2) Apex: Visible, localized & at normal site according to age.

3) Other pulsations: Not visible.

2. PALPATION:

1) Apex: Lt 4th ICS at MCL, localized, …… beats/min, regular, average force & duration, no special character, no palpable thrill.

2) Other pulsations: Not palpable.
((Pulmonary, aortic, Lt para-sternal, Rt para-sternal, supra-sternal & epi-gastric areas)).

3) Thrills: No palpable thrill.

3. PERCUSSION:

- Upper border of the liver is at Rt 5th ICS at MCL.
  - No dullness outside the Rt sternal border.
  - The 2 2nd ICSs are resonant.
  - No dullness outside the palpable apex.
  - The left border gives the impression of slight outer concavity.

4. AUSCULTATION:

AREA	HEART Ss	ADDED Ss	MURMURS
1. Mitral area (apex) 2. Pulmonary area 3. 1st aortic area 4. 2nd aortic area (Lt para-sternal area) 5. Tricuspid area 6. Inter-scapular area (back)	• S_1: Audible (normal or average intensity). • S_2: Audible (normal or average intensity).	• No added sounds.	• No murmurs.

.:: CHEST EXAMINATION ::.

1. INSPECTION:

1) Shape of the chest: Rounded or oval.

2) Movement with respiration: Mainly abdominal or thoracic, equal on both sides, no use of accessory muscles of respiration, no retractions, no paradoxical respiration.

3) Respiratory rate, rhythm & depth: …… cycles/min, average rhythm & depth.

4) Position of cardiac apex: Visible, localized & at normal site according to age.

5) No visible abnormalities of the skin, ribs or sternum.

2. PALPATION:

1) Position of cardiac apex: Lt 4th ICS at MCL, localized, …… beats/min, regular, average force & duration, no special character, no palpable thrill.

2) Position of trachea: Central or slightly deviated to the Rt.

3) Expansion & symmetry of the chest: Average & equal on both sides.

4) Tactile Vocal Fremitus: Average & equal on both sides.

5) No rhonchus fremitus (palpable rhonchi).
6) No tenderness or deformity.
7) No obvious swelling.

3. PERCUSSION:

- Resonant all over the chest, being most resonant below the clavicle & scapulae, least resonant over the scapulae.
- The lower border is in the mammary L. at 6th rib, mid-axillary L. at 8th rib, scapular L. at 10th rib.

4. AUSCULTATION:

1) Breath Ss:
- Vesicular breathing all over the chest & equal on both sides.
- Bronchial breathing over:
  - The trachea.
  - The manubrium sterni.
  - The vertebral column down to the 2nd, 3rd or 4th thoracic vertebra.

2) Vocal resonance: Average & equal on both sides.

3) No adventitious Ss (crepitations, rhonchi or pleural friction rub).

.:: ABDOMINAL EXAMINATION ::.

1. INSPECTION:

1) General symmetry (contour): Full contour or slightly scaphoid.

2) Acute (or right) sub-costal angle.

3) Respiratory movements: The abdominal wall moves out with inspiration & in with expiration.

4) No divarication of recti.
6) No visible masses, peristalsis or pulsations
8) No surgical scars.
10) Normal hair distribution.
5) No unusual pigmentation.
7) No umbilical hernia or discharge.
9) No distended abdominal veins.

2. PALPATION:

1) No palpable abdominal masses.

2) ** No inguinal hernia, hydrocele of the cord or palpable LNs & Descended testes (if male!!).**

3) No palpable spleen (except in the 1st 2 years, may be palpable 2 cm below Lt costal margin).

4) No palpable liver (except in the 1st 2 years, may be palpable 1-3 cm below Lt costal margin).
In the epigastrium, the palpable liver is firm, rounded border, smooth & regular surface, not tender, not pulsating.

5) No palpable kidneys (the lower part may be palpable, especially the Rt).

3. PERCUSSION:

1) Spleen: Dullness is elicited at Lt 9th-11th ICSs at mid-axillary L.
2) Liver: Upper border is located at Rt 5th ICS at MCL.
- Liver span:
  - At birth ≤ 5 cm.
  - At 5 years ≤ 6 cm.
  - At 10 years ≤ 7 cm.
  - At 15 years ≤ 8 cm.
  - At 20 years ≤ 9 cm.
3) No ascites.

4. AUSCULTATION:

- Normal bowl sounds of gurgling quality.

*** RENAL ANGLE ***

- Inspection: Concave.
- Palpation: No masses or tenderness.
- Percussion: Resonant.
- Auscultation: No arterial bruit (of renal artery stenosis).

.:: NEUROLOGICAL EXAMINATION ::.

1. MENTAL & INTELLECTUAL STATE: The patient is conscious, happy, calm & with average intelligence.

2. HANDEDNESS: Right handed.

3. SPEECH: Good speech.

4. CRANIAL NERVES: All are intact.

5. MOTOR EXAMINATION:

1) STRENGHT: Normal strength (grade 5).

2) Average muscle tone, bulk & co-ordination.

3) No involuntary movements:

4) No special posture of gait.

6. SENSORY EXAMINATION: All sensations are intact.
((As regard to superficial, deep & cortical sensations)).

7. REFLEXES: All are intact.
((As regard to superficial & deep reflexes)).

8. NO SIGNS OF MENINGEAL IRRITATION.

*** DONOT FORGET ***
(1) The pedigree.
(2) The inguinal region.
(3) The renal angle.
(4) Neurological examination.